

1. A purified polypeptide comprising the amino acid sequence of SEQ ID NO: 5.
2. The purified polypeptide of claim 1, wherein the polypeptide has the following characteristics:
 - (A) an apparent molecular weight of about 47,000 Da;
 - (B) an isoelectric point of about 5.1; and
 - (C) the ability to cyclize geranyl geranyl diphosphate.
3. The purified polypeptide of claim 1, wherein the purified polypeptide further comprises the amino acid sequences of SEQ ID NO:s 1, 2, 3, 4 and 6.
4. The purified polypeptide of claim 1 purified from a coral sample comprising *Pseudopterogorgia elisabethae* by a method comprising the steps of:
 - (A) preparing a cell free extract from the sample;
 - (B) separating the cell free extract into at least one fraction that exhibits elisabethatriene cyclase activity and at least one fraction that does not exhibit elisabethatriene cyclase activity; and
 - (C) collecting the at least one fraction that exhibits elisabethatriene cyclase activity.
5. The purified polypeptide of claim 4, wherein step (A) comprises:
flash freezing the sample using liquid nitrogen;
homogenizing the frozen sample with a buffer and liquid nitrogen;
separating the homogenized sample into a cellular portion and a non-cellular portion; and
collecting the non-cellular portion.
6. The purified polypeptide of claim 5, wherein step (B) comprises subjecting the cell free extract to at least one chromatographic separation step.

7. The purified polypeptide of claim 6, wherein the chromatographic separation step comprises DEAE ion exchange chromatography.

8. The purified polypeptide of claim 6, wherein the chromatographic separation step comprises phenyl sepharose chromatography.

9. The purified polypeptide of claim 6, wherein the chromatographic separation step comprises hydroxyapatite chromatography.

10. The purified polypeptide of claim 6, wherein the chromatographic separation step comprises ion exchange chromatography with 2-Propen-1-aminium, N,N,-dimethyl-N-2-propenyl-, chloride, polymer with 1,4-bis(1-oxo-2-propenyl) piperazine and 2-methyl-2-propenamide.

11. A purified nucleic acid encoding the purified polypeptide of claim 1.

12. A vector comprising the nucleic acid of claim 11.

13. The vector of claim 12, wherein said nucleic acid is operably linked to one or more expression control sequences.